



## Revision of the tree crickets of China (Orthoptera: Gryllidae: Oecanthinae)

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### Abstract

Eight species of tree crickets are reviewed from China including *Oecanthus antennalis*, *O. euryelytra*, *O. longicauda*, *O. similator*, *O. turanicus*, *O. zhengi*, *O. oceanicus* He **sp. nov.** and *Xabea levissima*. Calling songs and COI genes of all species are compared. Keys to species are given by morphology and songs. New species is posited in Museum of Biology, East China Normal University (ECNU). The state of *O. sinensis* is discussed. *O. latipennis* Liu, Yin & Xia, 1994 is a junior homonym of *O. latipennis* Riley, 1881.

**Key words:** tree cricket, Grylloidea, Gryllidae, *Oecanthus*, *Xabea*, phylogeny, song, China

### Introduction

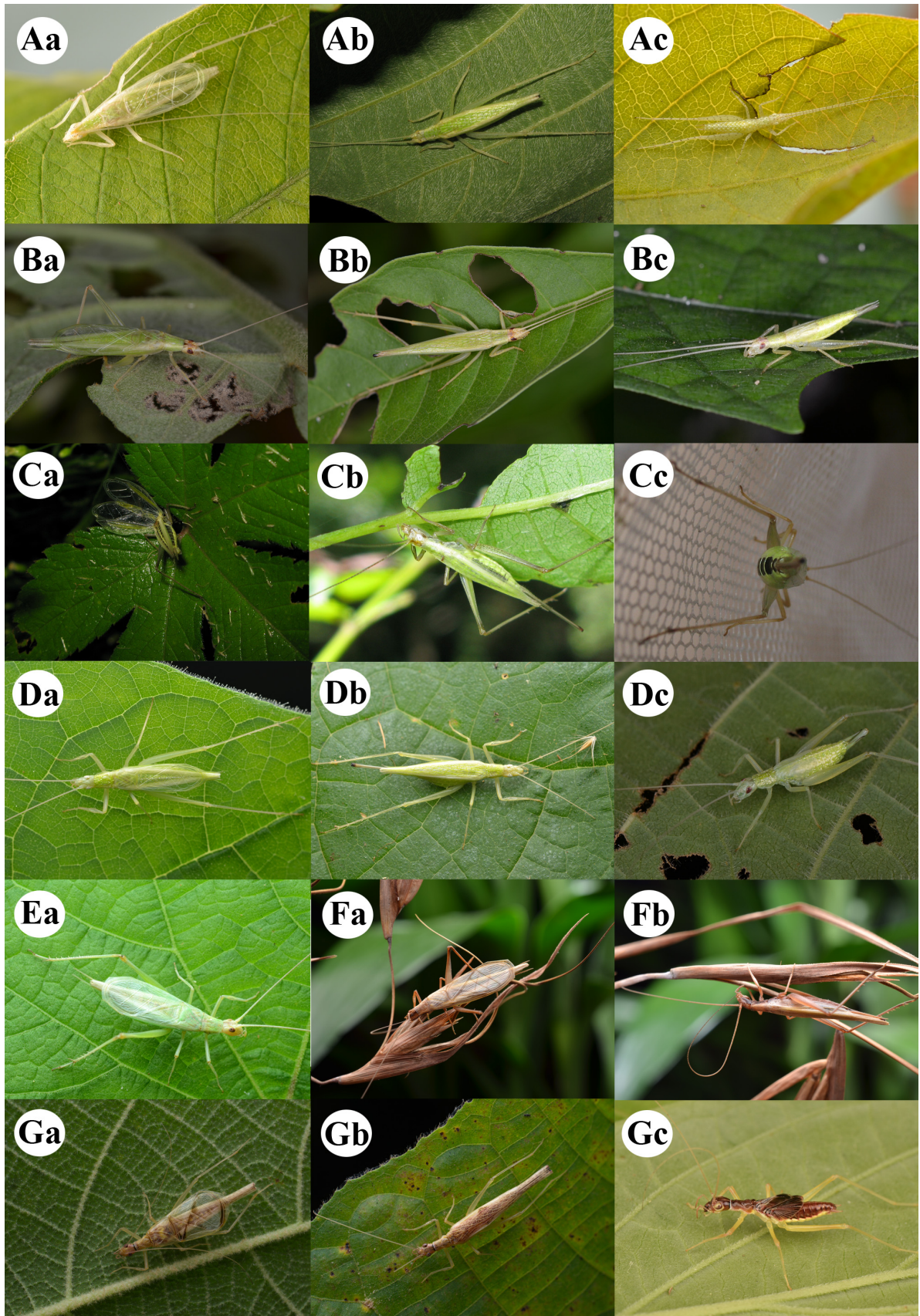
Tree crickets belong to the subfamily Oecanthinae (Cigliano *et al.* 2018). They are distinguished from most crickets by their prognathous head and usually are slender in body and posterior leg (Chopard 1969). In China *Oecanthus* spp. are similar in general appearance and body size (Fig. 1). For several reasons, we prefer to preserve these crickets in alcohol.

Tree crickets from North America have been well studied. Fulton and Walker distinguish them not only by morphology but also by songs (Fulton 1915;1925; Walker 1962;1963;1967; Walker & Collins 2010). In China, morphological features have been used over time. Liu *et al.* (1994) recorded five *Oecanthus* spp. from China including *O. antennalis*, *O. longicauda*, *O. rufescens*, *O. latipennis*, *O. turanicus*. Subsequently, Xie (2003) reported one new species *O. zhengi* from Kunming, Yunnan. He (2018) reported three new records, *O. euryelytra*, *O. similator*, *Xabea levissima*. Wu & Shi (2008) studied the calling songs of *O. rufescens*. Xie *et al.* (2010) compared the calling songs between *O. rufescens* and *O. longicauda*. In our study, we recorded the songs of all species and sequenced COI genes for identification.

### Materials and methods

**Taxonomic sampling.** We discovered and located these crickets by listening for their songs at night.

**DNA extraction and amplification.** The total genomic DNA was extracted from the muscles of one hind leg by AxyPrep Genomic DNA Miniprep Kit (AXYGEN), according to the manufacturer's instructions. The fragments of the mitochondrial cytochrome-c oxidase subunit I gene (COI, 658 bp) were sequenced. Primers COBL TYTCAACAAAYCAYAARGATATTGG and COBU TAAACTTCWGGRTGWCCAAARAATCA were used (Huang *et al.* 2013). Parameters for PCR were as follow: pre-denaturation for 5min at 94°C, 10 cycles of 30s at 94°C, 30 s at 45°C, then 30s at 72°C, followed by 25 cycles of 30s at 94°C, 30s at 51°C, 30s at 72°C and a final extension at 72°C for 7min. GenBank accession number are showed in Table 1.



**FIGURE 1.** Tree crickets of China in living condition. A—*Oecanthus antennalis*: a—male, b—female, c—nymph; B—*O. euryleytra*: a—male, b—female, c—nymph; C—*O. longicauda*: a—male, b—female, c—female showing abdomen; D—*O. similator*: a—male, b—female, c—nymph; E—*O. turanicus*: a—male; F—*O. zhengi*: a—male, b—female; G—*Xabea levissima*: a—male, b—female; c—nymph. (photographed by He Zhu-Qing and Zhang Tao)

**TABLE 1.** Collecting information and GenBank accession number

Species	Collection site	Collection time	GenBank No.
<i>O. antennalis</i> (1)	Jiangsu, Yangzhou	8-viii-2011	MH893702
<i>O. antennalis</i> (2)	Jiangsu, Nanjing	10-viii-2011	MH893703
<i>O. antennalis</i> (3)	Taiwan, Kantoushan	10-x-2012	MH893711
<i>O. euryelytra</i> (1)	Shanghai, Minhang	31-vii-2016	MH893707
<i>O. euryelytra</i> (2)	Fujian, Xiamen	13-x-2017	MH893733
<i>O. euryelytra</i> (3)	Zhejiang, Ningbo	25-viii-2016	MH893709
<i>O. euryelytra</i> (4)	Shanghai, Jinshan	1-x-2016	MH893716
<i>O. euryelytra</i> (5)	Taiwan, Kantoushan	10-x-2012	MH893710
<i>O. euryelytra</i> (6)	Shaanxi, Xi'an	7-vii-2017	MH893723
<i>O. euryelytra</i> (7)	Yunnan, Pu'er	23-iv-2017	MH893721
<i>O. euryelytra</i> (8)	Yunnan, Xishuangbanna	5-viii-2017	MH893732
<i>O. euryelytra</i> (9)	Shanghai, Chongming	10-vii-2017	MH893722
<i>O. euryelytra</i> (10)	Yunnan, Baoshan	11-viii-2017	MH893731
<i>O. euryelytra</i> (11)	JAPAN, Kobe	1-ix-2011	MH893704
<i>O. euryelytra</i> (12)	Yunnan, Baoshan	11-viii-2017	MH893734
<i>O. longicauda</i> (1)	Shaanxi, Ankang	19-viii-2010	MH893701
<i>O. longicauda</i> (2)	Jilin, Panshi	1-viii-2016	MH893706
<i>O. longicauda</i> (3)	Zhejiang, Lishui	9-ix-2016	MH893712
<i>O. longicauda</i> (4)	Shaanxi, Xi'an	15-viii-2016	MH893708
<i>O. longicauda</i> (5)	Zhejiang, Lishui	9-ix-2016	MH893713
<i>O. oceanicus</i> (1)	Guangdong, Shenzhen	15-xii-2016	MH893718
<i>O. oceanicus</i> (2)	Guangdong, Shenzhen	15-xii-2016	MH893719
<i>O. oceanicus</i> (3)	Guangdong, Shenzhen	15-xii-2016	MH893720
<i>O. similator</i> (1)	Zhejiang, Lishui	15-viii-2011	MH893700
<i>O. similator</i> (2)	Zhejiang, Lin'an	22-viii-2016	MH893717
<i>O. similator</i> (3)	Zhejiang, Hangzhou	8-ix-2017	MH893725
<i>O. similator</i> (4)	Shaanxi, Xi'an	1-viii-2016	MH893705
<i>O. similator</i> (5)	Zhejiang, Lishui	9-ix-2016	MH893714
<i>O. similator</i> (6)	Zhejiang, Hangzhou	8-ix-2017	MH893724
<i>O. similator</i> (7)	Zhejiang, Qingyuan	10-ix-2017	MH893726
<i>O. turanicus</i> (1)	Ningxia, Shizuishan	20-viii-2017	MH893727
<i>O. turanicus</i> (2)	Ningxia, Shizuishan	20-viii-2017	MH893728
<i>O. zhengi</i> (1)	Yunnan, Kunming	22-ix-2016	MH893715
<i>X. levissima</i> (1)	Yunnan, Pu'er	8-viii-2017	MH893729
<i>X. levissima</i> (2)	Yunnan, Tengchong	13-viii-2017	MH893730
<i>Beybienkoana</i> sp.	Yunnan, Mengla	5-viii-2017	MH893735

**Molecular phylogenetic analysis.** *Beybienkoana* sp. was used as the outgroup taxa. Two phylogenetic methods, maximum likelihood (ML) and Bayesian inference (BI), were performed to reconstruct phylogenetic trees for concatenated dataset. MrModeltest 2.3 (Nylander 2004) and ModelTest 3.7 (Posada & Crandall 1998) were used under the Akaike information criterion (AIC) to select the best-fit model for the maximum likelihood (ML) and Bayesian inference (BI) analyses. The maximum-likelihood (ML) analysis was performed by raxmlGUI v1.3.1 with GTRGAMMA model to each partition. A bootstrap analysis was performed with 1000 replications (Silvestro & Michalak 2012). The BI tree was conducted using the GTR+G+I model strategy with MrBayes 3.2.6

(Ronquist & Huelsenbeck 2003; Ronquist *et al.* 2012) on the MNHN cluster. The analyses run for two millions generations, sampling every 100 generations, the first 25% of samples were discarded as burn-in. The remaining samples were used to estimate the Bayesian posterior probability.

**Song analysis.** All specimens were kept singly in a plastic box with small holes (diameter: 20 mm, height: 50 mm) in the laboratory. Branches were placed in the box for the crickets to perch upon. We recorded the song over night by placing a Sony ICD-PX440 recorder near the box, and replayed the songs in computer for analysis by Cool Edit software.

## Result

**Molecular study.** As showed in Fig. 2, *Xabea levissima* separated with *Oecanthus* spp. firstly. In *Oecanthus* spp. clade, *O. antennalis* separated with others, and the rest tree cricket showed low support value among different species. *O. euryelytra* was monophyletic group whether from China or Japan. *O. longicauda* and *O. similator* showed very close relationship, and *O. similator* was considered to be evolved from a group of *O. longicauda*.

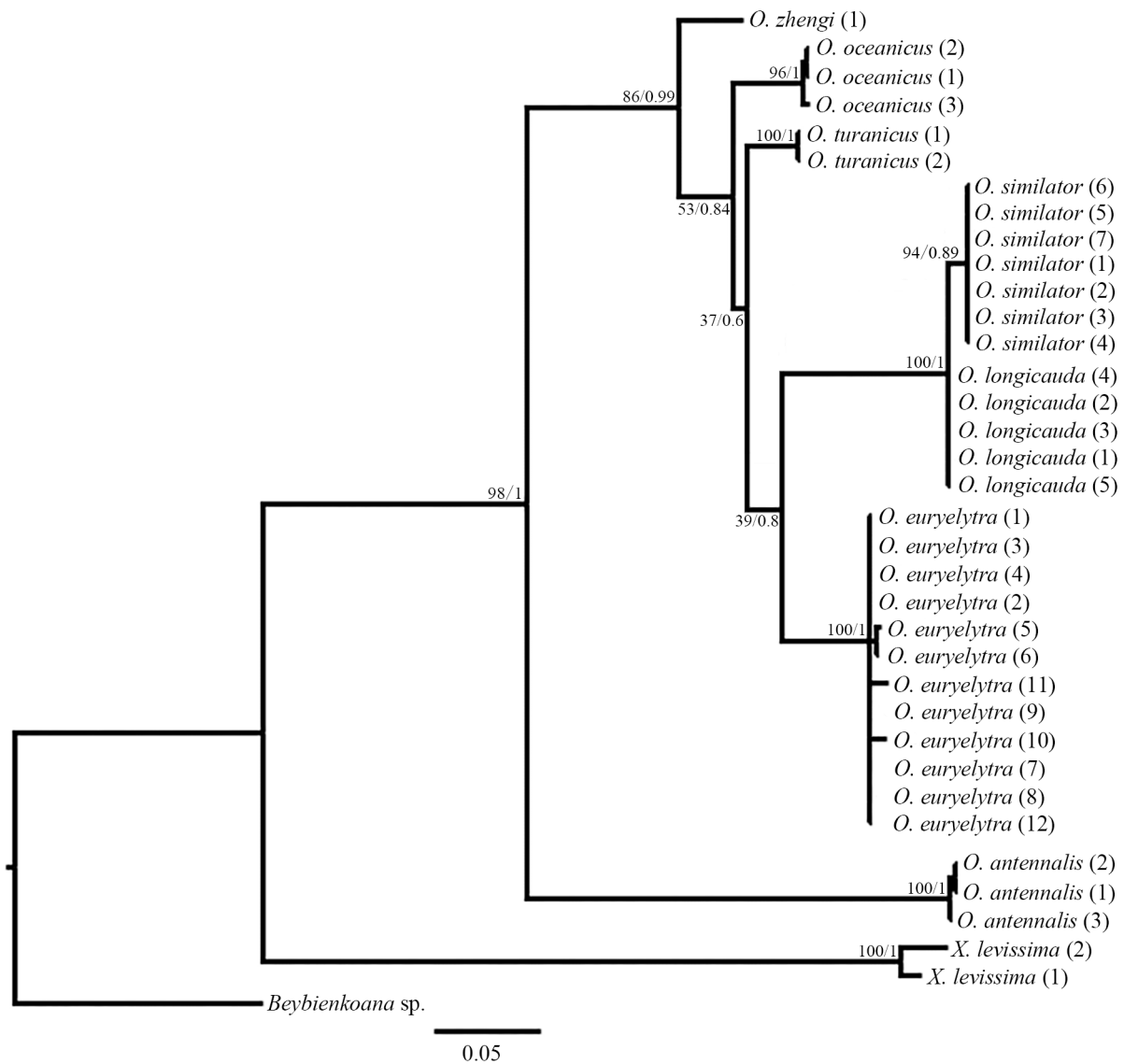
**Song study.** As showed in Table 2 and Fig. 3, there are two types of calling songs. Songs of type 1 is chirps with interval including *O. euryelytra*, *O. turanicus*, *O. zhengi*, *O. oceanicus*. There are differences in chirp cycle duration, chirp interval and pulses number in each chirp. Songs of type 2 is continuous chirps including *O. similator*, *O. longicauda*, *O. antennalis*, *X. levissima*. Pulses number in per second and rhythm are different among species.

**TABLE 2.** Calling songs of Chinese tree cricket

Type 1					
species	Area	Temperature (°C)	chirp cycle duration (s)	chirp interval (s)	Pulses number in each chirp
<i>O. euryelytra</i>	Fujian, Da'an	28	0.184±0.009	0.254±0.015	13.28±0.76
<i>O. euryelytra</i>	Hainan	23	0.306±0.015	0.382±0.020	17.12±0.64
<i>O. euryelytra</i>	Shaanxi, Xi'an	26	0.277±0.014	0.440±0.064	15.50±1.64
<i>O. oceanicus</i>	Guangdong, Shenzhen	20	1.106±0.081	0.974±0.057	45.25±2.87
<i>O. turanicus</i>	Ningxia, Shizuishan	26	0.357±0.036	0.159±0.021	13.20±0.84
<i>O. zhengi</i>	Yunnan, Kunming	26	0.248±0.023	0.354±0.052	12.17±0.75
Type 2					
species	Area	Temperature (°C)	Pulses/second	rhythm	
<i>O. antennalis</i>	Jiangsu, Nanjing	27	65.1	continuous	
<i>O. longicauda</i>	Zhejiang, Lishui	26	28.2	2 or 3 pulses combined	
<i>O. longicauda</i>	Shaanxi, Ankang	25	22.2	2 or 3 pulses combined	
<i>O. similator</i>	Zhejiang, Ningbo	20	31.1	3 pulses combined	
<i>X. levissima</i>	Yunnan, Pu'er	26	15.8	continuous	

## Key to species of Oecanthinae from China (based on calling songs)

1	songs with interval	2
-	songs continuous	4
2	chirp cycle duration and chirp interval nearly 1 second	<i>O. oceanicus</i> sp. nov.
-	neither chirp cycle duration nor chirp interval longer than 0.5 second	3
3	chirp cycle duration two times longer than chirp interval	<i>O. turanicus</i>
-	chirp cycle duration shorter than chirp interval	<i>O. euryelytra</i> or <i>O. zhengi</i>
4	pulses/second more than 60	<i>O. antennalis</i>
-	pulses/second less than 40	5
5	pulses/second more than 20	<i>O. similator</i> or <i>O. longicauda</i>
-	pulses/second less than 20	<i>X. levissima</i>



**FIGURE 2.** ML tree of tree crickets from China based on COI genes. Bootstrap support (left) and Bayesian posterior probability (right) are indicated for all nodes.

## Taxonomy

### Family Gryllidae

### Subfamily Oecanthinae

## Key to species of Oecanthinae of China (based on morphology)

1	posterior tibiae without spines . . . . .	<i>X. levissima</i>
-	posterior tibiae with a certain number of small spines . . . . .	2
2	three black spots on the ventral surface of the first two antennal segments . . . . .	<i>O. antennalis</i>
-	antennae without black spots. . . . .	3
3	forewing narrow in male (length:width >3.3), ovipositor longer than 9 mm . . . . .	4
-	forewing wide in male (length:width <2.9), ovipositor shorter than 8 mm . . . . .	5
4	abdomen black ventrally . . . . .	<i>O. longicauda</i>
-	abdomen pale ventrally . . . . .	<i>O. similator</i>
5	posterior tibiae usually with 5-7 large spines . . . . .	<i>O. turanicus</i>
-	posterior tibiae usually with less than 5 large spines . . . . .	6
6	abdomen concolorous . . . . .	7
-	abdomen concolorous but with black spots in the middle of each segment in dorsal view . . . . .	<i>O. oceanicus</i> <b>sp. nov.</b>
7	lateral lobes of pronotum yellow with half lower part black or brown. . . . .	<i>O. zhengi</i>
-	lateral lobes of pronotum concolorous . . . . .	<i>O. euryelytra</i>

## Genus *Oecanthus*

Type species: *Acheta italica* Fabricius (= *Oecanthus pellucens pellucens*)

### 1. *O. antennalis* Liu, Yin & Hsia, 1994

(Fig. 1A)

*Oecanthus antennalis* Liu, Yin & Hsia, 1994; Yin & Liu, 1995; He, 2018

**Material examined.** 1 male, CHINA, Jiangsu Prov., Yangzhou, 8-viii-2011, coll. He Zhu-Qing; 1 male, CHINA, Jiangsu Prov., Nanjing, 10-viii-2011, coll. He Zhu-Qing.

**Distribution.** China (Anhui, Jiangsu, Taiwan)

**Song.** This species sings as type 2. Chirps are continuous. Pulses per second are about 65.1.

**Note.** There are three black spots on the ventral surface of the first two antennal segments, which is similar to *Oecanthus* spp. from American (the molecular result also showed this species was genetically distant from others). Small white spots on the dorsal surface of pronotum and abdomen. Nymphs bear many small black spots on legs. The song rate is fast and it sounds noisy to the human ear.

### 2. *O. euryelytra* Ichikawa, 2001

(Fig. 1B)

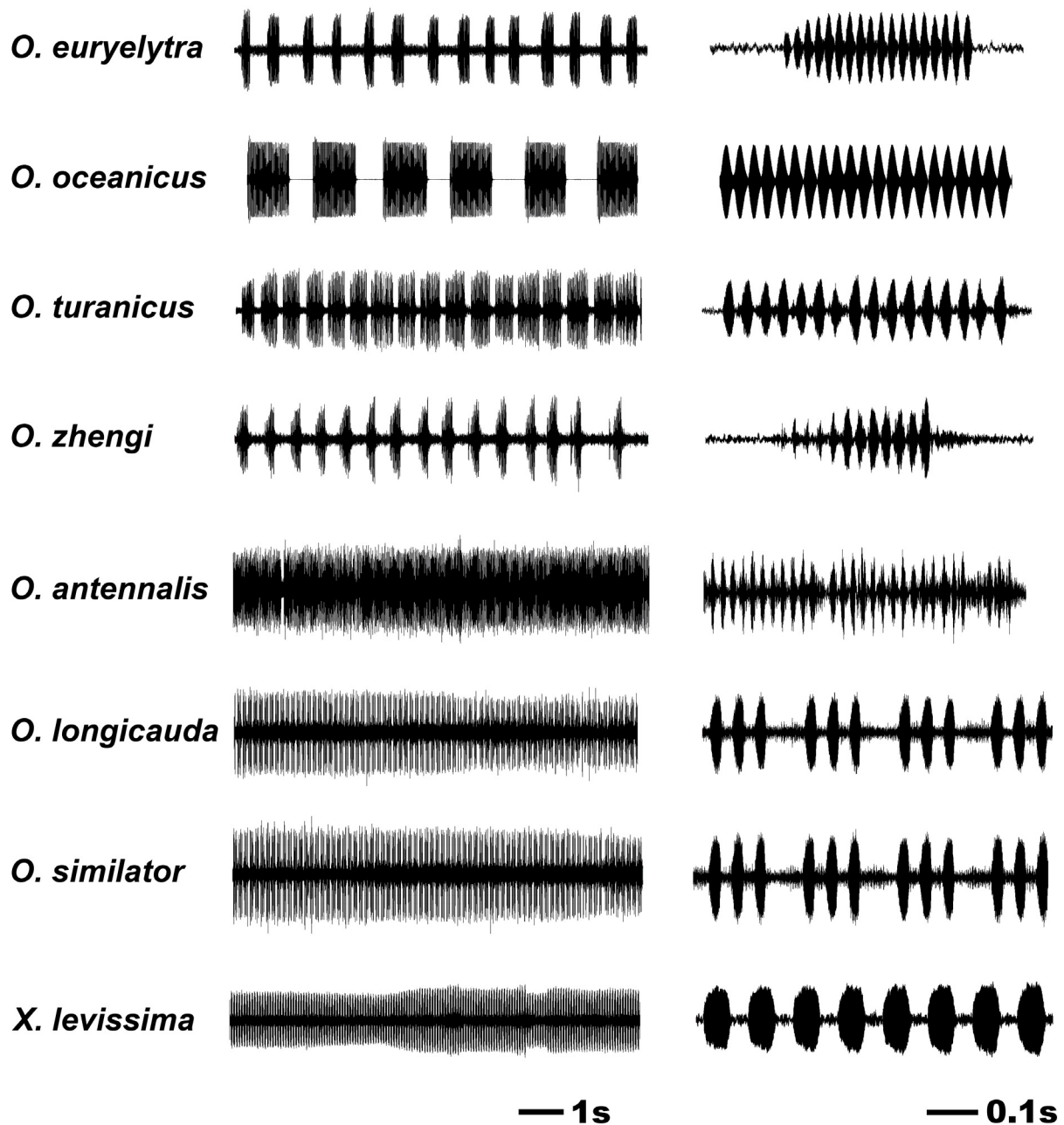
*Oecanthus euryelytra* Ichikawa, 2001; He, 2018

*Oecanthus rufescens* Liu, Yin & Hsia, 1994 misidentification; Yin & Liu, 1995 misidentification; Wu & Shi, 2008 misidentification; Xie *et al.*, 2010 misidentification

**Material examined.** 1 male, CHINA, Shanghai, Minhang, 31-vii-2016, coll. He Zhu-Qing; 1 male & 2 females, CHINA, Fujian Prov., Xiamen, 13-x-2017, coll. He Zhu-Qing; 2 male & 1 female, CHINA, Zhejiang Prov., Ningbo, 25-viii-2016, coll. He Zhu-Qing; 1 male, CHINA, Shanghai, Jinshan, 1-x-2016, coll. He Zhu-Qing; 1 male, CHINA, Shaanxi Prov., Xi'an, 7-vii-2017, coll. He Zhu-Qing; 1 male, CHINA, Yunnan Prov., Pu'er, 23-iv-2017, coll. He Zhu-Qing; 1 male, CHINA, Yunnan Prov., Xishuangbanna, 5-viii-2017, coll. He Zhu-Qing; 1 male & 1 female, CHINA, Shanghai, Chongming, 10-vii-2017, coll. He Zhu-Qing; 2 males, CHINA, Yunnan Prov., Baoshan, 11-viii-2017, coll. He Zhu-Qing.

**Distribution.** China (Fujian, Hainan, Shaanxi, Taiwan, Yunnan, Zhejiang), Korea, Japan

**Song.** This species sings as type 1. Chirp cycle duration varied from 0.184s to 0.306s. Interval between chirps varied from 0.254s to 0.440s. In each chirp, pulses number varied from 13-17. For same individual, chirp cycle duration is shorter than chirp interval.



**FIGURE 3.** Calling songs of Chinese tree crickets. *Oecanthus antennalis* (from Jiangsu, Nanjing); *O. euryelytra* (from Shaanxi, Xi'an); *O. longicauda* (from Shaanxi, Ankang); *O. oceanicus* **sp. nov.** (from Guangdong, Shenzhen); *O. similator* (from Zhejiang, Tiantong); *O. turanicus* (from Ningxia, Shizuishan); *O. zhengi* (from Yunnan, Kunming); *Xabea levissima* (from Yunnan, Jinggu)

**Note.** Liu *et al.* (1994) identified this species as *O. rufescens*, but they emphasized that this identification was provisional. Judging by the molecular results, the COI genes are the almost same whether from China or Japan. Thus we regard this species as *O. euryelytra* provisionally. *O. euryelytra* is widely distributed in East Asia and common in low altitude areas. In Shanghai, this species is biovoltine. The first generation become adults in July and second generation in September. They lay eggs in grass, *Conyza canadensis* or *Solidago canadensis*. Eggs hatch in May of the next year.

### 3. *O. longicauda* Matsumura, 1904

(Fig. 1C)

*Oecanthus longicauda* Matsumura, 1904; Liu, Yin & Hsia, 1994; Yin & Liu, 1995; Xie *et al.*, 2010; He, 2018

**Material examined.** 1 male & 1 female, CHINA, Shaanxi Prov., Ankang, 19-viii-2010, coll. He Zhu-Qing; 2 males, CHINA, Jilin Prov., Panshi, 1-viii-2016, coll. He Zhu-Qing; 2 males & 2 females, CHINA, Zhejiang Prov., Lishui, 9-ix-2016, coll. He Zhu-Qing; 2 male & 1 females, CHINA, Shaanxi, Xi'an, 15-viii-2016, coll. Chen Lao-Chong.

**Distribution.** China (Jilin, Shaanxi, Zhejiang), Korea, Japan

**Song.** This species sings as type 2. Pulses per second are about 22.2-28.2. Two of three pulses are combined as one group.

**Note.** This species has longer ovipositor than the others. The ventral side of abdomen is always black. Some individuals have two black lines on the both sides of abdomen. We consider this as a different color pattern. Songs are similar to *O. similator*.

### 4. *Oecanthus oceanicus* He sp. nov.

(Fig. 4)

**Holotype:** male, CHINA, Guangdong, Shenzhen, 15-xii-2016, coll. Tao Zhang (ECNU).

**Paratypes:** 2 males & 1 female, same data as holotype (ECNU).

**Description.** Male. Typical characters of this genus (Fig. 4A). Head: small and flattened, eyes longitudinal elongated, frontal rostrum litter narrower than 1st antennal joint, 3rd-5th joints of maxillary palpi elongated. Pronotum: transverse, narrowing in front, anterior and posterior margin straight, metanotal glands as in Fig. 4E. Forewing longer than abdomen, narrowing in front and gradually widened, mirror large with one vein, hindwing little longer than forewing. Tympanum larger on inside and smaller on outside; fore-tibiae expanded near tympanum, 4-5 spines on post-tibiae, often 6 spines. Genitalia as in Fig. 4C,D.

**Female.** Fig. 4B. Similar to male. Forewing narrow, dorsal field with 4-5 regular veins with transverse veins, lateral field with 8 veins. Ovipositor straight.

**Coloration.** Body yellow, abdomen with black spots on abdomen in dorsal view.

**Etymology.** Species name *oceanicus* means its distribution near coastline.

**Measurements** (in mm): male: body length 13.78-14.90, forewing length 12.26-12.86, hindwing length 14.88-14.89, hind femur length 8.32-8.72; female: body length 11.85, forewing length 10.65, hindwing length 14.83, hind femur length 7.59, ovipositor length 6.38.

**Distribution.** China (Guangdong)

**Song.** This species sings as type 1. Chirp cycle duration is 1.106s. Interval between chirps is 0.974s. In each chirp, pulses number is about 45. Chirp cycle duration is litter longer than chirp interval.

**Note.** This species inhabits in *Miscanthus floridulus* from November to February of the following year (observed by Zhang Tao). Its appearance is similar to *O. euryelytra*, but the new species has black spots on the surface of the abdomen. Molecular results supports that this is a valid species. Its calling songs are different from the others, both chirp cycle duration and chirp interval is the longest among type 1 species from China.

### 5. *O. similator* Ichikawa, 2001

(Fig. 1D)

*Oecanthus similator* Ichikawa, 2001; He, 2018

**Material examined.** 1 male, CHINA, Zhejiang Prov., Lishui, Baishanzu, 15-viii-2011, coll. He Zhu-Qing; 2 males & 1 female, CHINA, Zhejiang Prov., Lin'an, Tianmushan, 22-viii-2016, coll. He Zhu-Qing; 2 male & 2 females, CHINA, Zhejiang Prov., Hangzhou, 8-ix-2017, coll. He Zhu-Qing; 1 male & 1 female, CHINA, Shaanxi Prov., Xi'an, 1-viii-2016, coll. Chen Lao-Chong; 1 male, CHINA, Zhejiang Prov., Lishui, Baishanzu, 9-ix-2016, coll. He Zhu-Qing; 1 male, CHINA, Zhejiang Prov., Qingyuan, 10-ix-2017, coll. He Zhu-Qing.



**Distribution.** China (Shaanxi, Zhejiang), Japan

**Song.** This species sings as type 2. Pulses per second are about 31.1. Three pulses are combined as one group.

**Note.** This species is very similar to *O. longicauda*, but the color of abdomen is concolorous and without black stripes. Molecular results indicated that it seems to have had an independent evolution from a branch of *O. longicauda*. Songs are also similar to *O. longicauda*, and care needs to be taken when attempting to identify these two species only by song. This species is univoltine with adults appeared in August in Zhejiang. They are found mostly on the leaves of *Paulownia tomentosa*.

## 6. *O. turanicus* Uvarov, 1912

(Fig. 1E)

*Oecanthus pellucens turanicus* Uvarov, 1912

*Oecanthus turanicus* Semenov, 1915; Liu, Yin & Hsia, 1994; Yin & Liu, 1995; He, 2018

**Material examined.** 1 male, CHINA, Ningxia, Shizuishan, 20-viii-2017, coll. Lou Tong; 1 male, CHINA, Ningxia, Shizuishan, 20-viii-2017, coll. Lou Tong.

**Distribution.** China (Ningxia, Xinjiang), Middle East.

**Song.** This species sings as type 1. Chirp cycle duration is 0.357s. Interval between chirps is 0.159s. In each chirp, pulses number is about 13. Chirp cycle duration is longer than chirp interval.

**Note.** This species differs from others by 5–7 large spines on posterior tibiae. It is univoltine with adults appearing in August in Shizuishan, Ningxia (observed by Lou Tong).

## 7. *O. zhengi* Xie, 2003

(Fig. 1F)

*Oecanthus zhengi* Xie, 2003; He, 2018

**Material examined.** 1 male, CHINA, Yunnan Prov., Kunming, 22-ix-2016, coll. He Zhu-Qing.

**Distribution.** China (Yunnan)

**Song.** This species sings as type 1. Chirp cycle duration is 0.248s. Interval between chirps is 0.354s. In each chirp, pulse number is about 12. Chirp cycle duration is shorter than chirp interval.

**Note.** This species is univoltine with adults appeared in August and September in Kunming, Yunnan. The songs are similar to *O. euryelytra*. Molecular results support its validity. Although *O. euryelytra* is distributed in West and South Yunnan (low altitude), this species has restricted distribution in Kunming or nearby area (altitude about 1900m).

## Genus *Xabea*

**Type species:** *Xabea decora* Walker

## 8. *Xabea levissima*

(Fig. 1G)

*Xabea levissima* Gorochov, 1992; He, 2018

**Material examined.** 1 male, CHINA, Yunnan Prov., Pu'er, Jinggu 8-viii-2017, coll. He Zhu-Qing; 1 male, CHINA, Yunnan Prov., Tengchong, Baihualing 13-viii-2017, coll. He Zhu-Qing.

**Distribution.** China (Yunnan), Vietnam.

**Song.** This species sings as type 2. Chirps are continuous. Pulses per second are about 15.8.

**Note.** That posterior tibiae without spines is the feature of genus *Xabea*. This species is distributed in South and West Yunnan Prov.

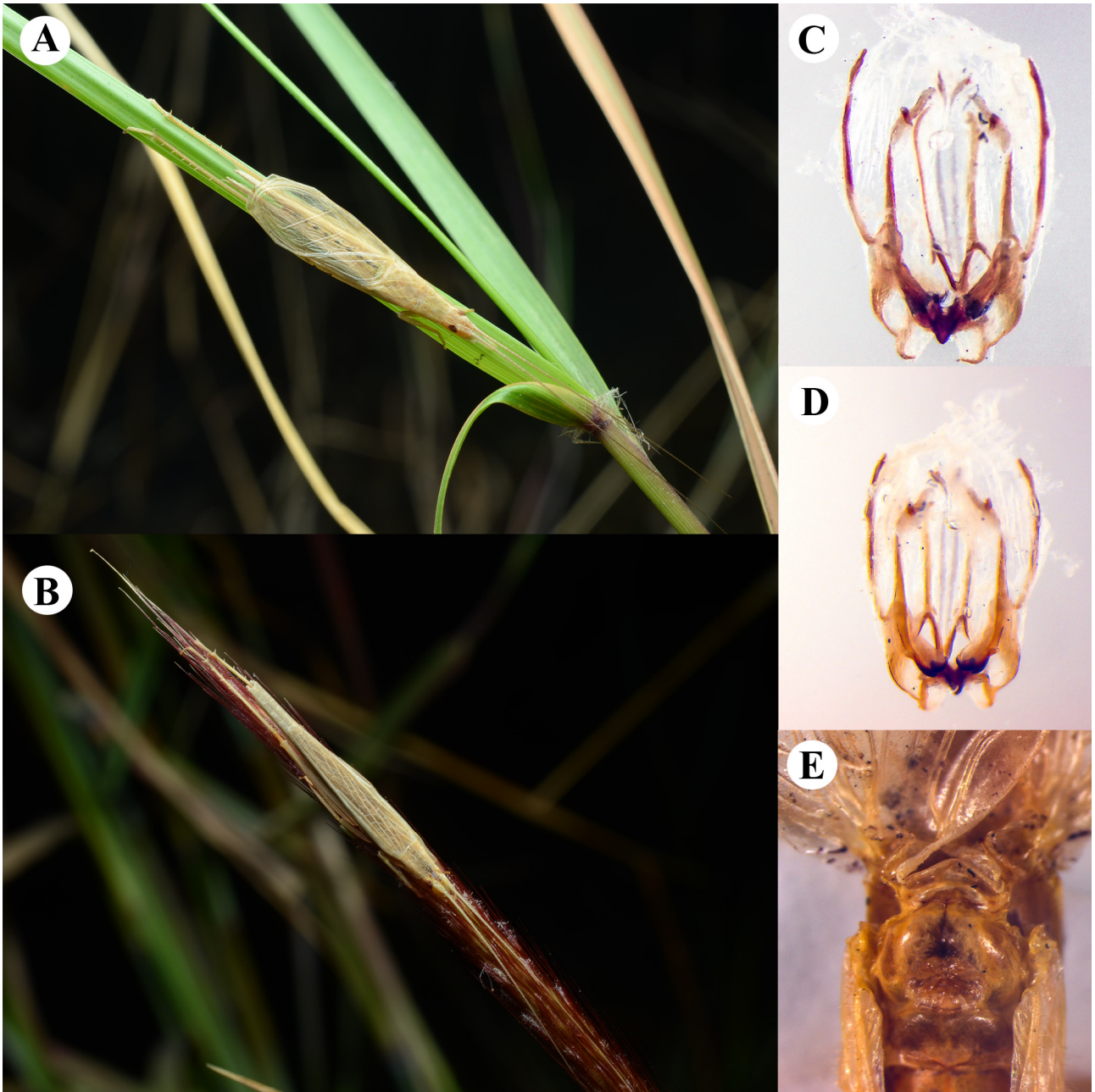


FIGURE 4. *Oecanthus oceanicus* sp. n. A—male; B—female; C—genitalia in dorsal view; D—genitalia in ventral view; E—metanotal glands.

## Discussion

***O. sinensis* Walker, 1869.** The holotype of this species does not bear information about its collection. Judging by the collection date, we propose that it might be from Guangdong Prov. Moreover, it is a female nymph, which makes it difficult for identification. The differences among nymphs needs to be studied to confirm the true identity of *O. sinensis*.

***O. latipennis* Liu, Yin & Xia, 1994.** This species is a junior homonym of *O. latipennis* Riley, 1881. Holotype data: male, Beijing, China, 16-viii-1929, coll. P. Lincent; allotype data: female, Beijing, China, 19-viii-1930, coll. P. Lincent. We have not collected this species in Beijing during these years and we do not suggest using a new name to replace it before additional investigations.

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